SOAR WITH FALCON

Falcon® 4400 Series
with Windows® CE

Falcon 4410
26-Key model

Falcon 4420
48-Key model

Falcon 4400
52-Key NU model

Addendum: New Features

psc

PSC Inc
959 Terry Street
Eugene, Oregon 97402
Telephone: (541) 683-5700
Fax: (541) 345-7140

An Unpublished Work - All rights reserved. No part of the contents of this documentation or the procedures described therein may be reproduced or transmitted in any form or by any means without prior written permission of PSC Inc. or its wholly owned subsidiaries ("PSC"). Owners of PSC products are hereby granted a non-exclusive, revocable license to reproduce and transmit this documentation for the purchaser's own internal business purposes. Purchaser shall not remove or alter any proprietary notices, including copyright notices, contained in this documentation and shall ensure that all notices appear on any reproductions of the documentation.

Should future revisions of this manual be published, you can acquire printed versions by contacting your PSC representative. Electronic versions may either be downloadable from the PSC website (**www.psc.com**) or provided on appropriate media. If you visit our website and would like to make comments or suggestions about this or other PSC publications, please let us know via the “Contact PSC” page.

Disclaimer

PSC has taken reasonable measures to provide information in this manual that is complete and accurate, however, PSC reserves the right to change any specification at any time without prior notice.

PSC is a registered trademark of PSC Inc. The PSC logo is a trademark of PSC. All other trademarks and trade names referred to herein are property of their respective owners.

Falcon® is a registered trademark of PSC Inc. and of its wholly owned subsidiaries.

Microsoft Windows®, Windows® 2000, Windows®CE, Windows® NT, and Windows® XP are registered trademarks of Microsoft Corporation.

Patents

This product may be covered by one or more of the following patents: 4603262 • 4639606 • 4652750 • 4672215 • 4699447 • 4709369 • 4749879 4786798 • 4792666 • 4794240 • 4798943 • 4799164 • 4820911 • 4845349 • 4861972 • 4861973 • 4866257 • 4868836 • 4879456 • 4939355 • 4939356 • 4943127 • 4963719 • 4971176 • 4971177 • 4991692 • 5001406 • 5015831 • 5019697 • 5019698 • 5086879 • 5115120 • 5144118 • 5146463 • 5179270 • 5198649 • 5200597 • 5202784 • 5208449 • 5210397 • 5212371 • 5212372 • 5214270 • 5229590 • 5231293 • 5232185 • 5233169 • 5235168 • 5237161 • 5237162 • 5239165 • 5247161 • 5256864 • 5258604 • 5258699 • 5260554 • 5274219 • 5296689 • 5298728 • 5311000 • 5327451 • 5329103 • 5330370 • 5347113 • 5347121 • 5371361 • 5382783 • 5386105 • 5389917 • 5410108 • 5420410 • 5422472 • 5426507 • 5438187 • 5440110 • 5440111 • 5446271 • 5446749 • 5448050 • 5463211 • 5475206 • 5475207 • 5479011 • 5481098 • 5491328 • 5493108 • 5504350 • 5508505 • 5512740 • 5541397 • 5552593 • 5557095 • 5563402 • 5565668 • 5576531 • 5581707 • 5594231 • 5594441 • 5598070 • 5602376 • 5608201 • 5608399 • 5612529 • 5629510 • 5635699 • 5641958 • 5646391 • 5661435 • 5664231 • 5666045 • 5671374 • 5675138 • 5682028 • 5686716 • 5696370 • 5703347 • 5705802 • 5714750 • 5717194 • 5723852 • 5750976 • 5767502 • 5770847 • 5786581 • 5786585 • 5787103 • 5789732 • 5796222 • 5804809 • 5814803 • 5814804 • 5821721 • 5822343 • 5825009 • 5834708 • 5834750 • 5837983 • 5837988 • 5852286 • 5864129 • 5869827 • 5874722 • 5883370 • 5905249 • 5907147 • 5923023 • 5925868 • 5929421 • 5945670 • 5959284 • 5962838 • 5979769 • 6000619 • 6006991 • 6012639 • 6016135 • 6024284 • 6041374 • 6042012 • 6045044 • 6047889 • 6047894 • 6056198 • 6065676 • 6069696 • 6073849 • 6073851 • 6094288 • 6112993 • 6129279 • 6129282 • 6134039 • 6142376 • 6152368 • 6152372 • 6155488 • 6166375 • 6169614 • 6173894 • 6176429 • 6188500 • 6189784 • 6213397 • 6223986 • 6230975 • 6230976 • 6237852 • 6244510 • 6259545 • 6260763 • 6266175 • 6273336 • 6276605 • 6279829 • 6290134 • 6290135 • 6293467 • 6303927 • 6311895 • 6318634 • 6328216 • 6332576 • 6332577 • 6343741 • 6454168 • 6478224 • 6568598 • 6578765 • 6705527 • 6974084 • 6991169 •7051940 • AU703547 • D312631 • D313590 • D320011 • D320012 • D323492 • D330707 • D330708 • D349109 • D350127 • D350735 • D351149 • D351150 • D352936 • D352937 • D352938 • D352939 • D358588 • D361565 • D372234 • D374630 • D374869 • D375493 • D376357 • D377345 • D377346 • D377347 • D377348 • D388075 • D446524 • EP0256296 • EP0260155 • EP0260156 • EP0295936 • EP0325469 • EP0349770 • EP0368254 • EP0442215 • EP0498366 • EP0531645 • EP0663643 • EP0698251 • GB2252333 • GB2284086 • GB2301691 • GB2304954 • GB2307093 • GB2308267 • GB2308678 • GB2319103 • GB2333163 • GB2343079 • GB2344486 • GB2345568 • GB2354340 • ISR107546 • ISR118507 • ISR118508 • JP1962823 • JP1971216 • JP2513442 • JP2732459 • JP2829331 • JP2953593 • JP2964278 • MEX185552 • MEX187245 • RE37166 • Other Patents Pending

Table of Contents

New Features 3
52-Key Numbers Up (NU) Keypad 3
52-Key NU Keyboard Configuration 5
52-Key NU Warm Reset 6
FlashFX Disk Size 6
AutoStart 7
Installing CAB files 7
How AutoStart Uses Wceload 8
Interactive CAB Install 8
Autostart.ini 9
Line Formatting 9
AutoStart Options 10

NOTES

Addendum
Falcon® 4400 Series with Windows® CE

New Features

This Addendum describes new options available for the Falcon 4400 with Windows CE. These include a full alphanumeric Numbers Up (NU) Keypad, 128/128 memory, and a high-density 2D scan engine. For more complete information on these and other features, reference the *Quick Reference Guide (QRG)* and the *Product Reference Guide (PRG)*. Electronic copies of both manuals can be found on the Product CD that shipped with your unit, or you can download them from the PSC Web site at www.psc.com.

52-Key Numbers Up (NU) Keypad

The full alphanumeric 52-Key Numbers Up (NU) keypad brings frequently used keys into a more ergonomic position, and is available with the 5250 TE overlay.

52-Key NU Keypad Features

Table 1. 52-Key NU Keypad Attributes - Special Keys

Key Name	Function/Description
<Scan>	Press <Scan> to activate the laser scanner.
<Ctrl>	<Ctrl> allows keyboard shortcuts like a PC. You can perform functions such as Save (Ctrl-s) and Find (Ctrl-f). Toggle on and off for text formatting (for example, Ctrl-b for bold, Ctrl-i for italics, Ctrl-u for underline).
<Alt>	Press <Alt> to enter the Alt input state. Use Alt mode to access application menus.
<Shift>	Press <Shift> to enter Shift input states. Use Shift mode to output upper-case characters and punctuation (identified over number keys).

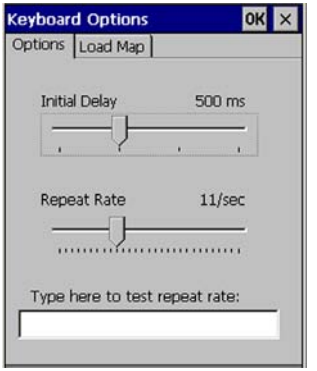
Table 2. 52-Key NU Input States & System Tray Indicators

Icon	State	Function
Fn	Fn Mode	Fn mode converts alpha keys to punctuation and function keys. Fn mode is activated by pressing <Fn>.
⇧	Shift Mode	Shift mode converts characters to upper-case letters or punctuation. Activated by pressing <Shift>. This state expires after a normal key is pressed unless the <Shift> key is held down. Toggles to make the next alpha character capitalized. If Shift state is active when the Caps State is active, no icon is displayed.

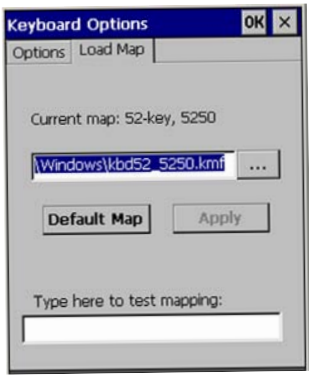
Icon	State	Function
	Alt Mode	Alt mode converts keys to system keys that allow users to access the menu. Activated by pressing **<Alt>**. This state expires after a normal key is pressed unless the **<Alt>** key is held down.
	Ctrl Mode	**<Ctrl>** allows keyboard shortcuts. You can perform functions such as Save (**Ctrl-s**) and Find (**Ctrl-f**). Toggle on and off for text formatting (for example, **Ctrl-b** for bold, **Ctrl-i** for italics, **Ctrl-u** for underline).

52-Key NU Keyboard Configuration

The control panels for the 52-key NU keypad have several options and an additional tab for key mapping.



1. Select **Start > Settings > Control Panel > Keyboard** to open the Keyboard control panel.
2. On the **Options** tab, adjust the slider for **Initial Delay.** This configures the time to hold down a key before it repeats.
3. **Repeat Rate** configures how fast the keys repeat.
4. Use the box provided to test the selected repeat rate setting.



5. On the **Load Map** tab, you can select a keyboard key-map by browsing, or change to the **Default Map**.
6. Use the box provided to test the current keyboard mapping.
7. Tap **OK** to save your changes and exit the **Keyboard Options** control panel.

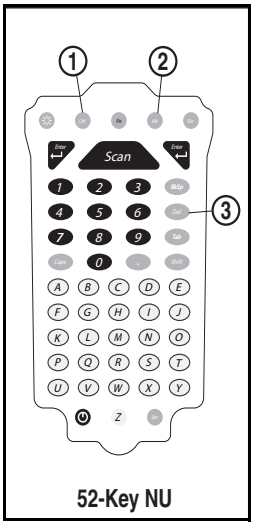
52-Key NU Warm Reset

This Addendum covers the procedure for the 52-key NU keypad. Reference *Keypads* in the *Falcon 4400 with Windows CE Quick Reference Guide (QRG)* for information on other keypads.

A warm reset is a transition from the on or idle condition that closes all applications, clears the working RAM, but preserves the file system. If an application "hangs," initiate a warm reset to terminate the application.

Procedure to Warm Reset

The first two keys of the sequence can be pressed in any order, but the unit will not reset until they both are held down and then the third key (**<Del>**) is pressed. All three keys must be held down for the unit to reset.



52-Key NU

52-Key NU Falcon.

Press and hold: **<Ctrl>+<Alt>+<Del>**.

If a Warm Reset is unsuccessful in resetting the unit, you must perform a Cold Reset. Reference the *QRG* for information on this procedure.

FlashFX Disk Size

The size of the FlashFX disk will vary, depending upon several factors, such as the size and number of currently running applications and the amount of memory currently consumed by the OS. See the *QRG* for details on viewing the FlashFX disk.

Table 3. FlashFX Disk Specifications

FlashFX Disk Specifications		
Total Flash size	64.0 MB	128 MB
OS/Firmware uses	up to 32.0 MB	32 MB
FlashFX size	32.0 MB	96 MB
File storage size	31 MB (approximate)	90 MB (approximate)
Running Application	22 MB (approximate)	81 MB (approximate)

AutoStart

The AutoStart program provides two functions:

- Automatically reinstalls specified CAB files when the Falcon starts up.
- Allows you to create a list of applications (with optional command line arguments) to run automatically at startup.

CAUTION

Performing a Windows Mobile Clean Boot will remove the AutoStart folder and all AutoStart settings. Reference the *Falcon 4400 with Windows Mobile QRG* for detailed information about a Clean Boot.

AutoStart launches each time the Falcon is rebooted with a Cold Reset. AutoStart then installs all the CAB files located in the AutoStart CAB folder. If the AutoStart CAB folder does not exist, no CAB files will be installed.

Table 4. AutoStart CAB folder Location

Product	Operating System	Location
F4400	Windows CE	`\FlashFX Disk`
	Windows Mobile	`\Windows\Autostart`

AutoStart will then run the **`Autostart.ini`** (reference Table 5 for the location), executing each line with the specified command line arguments. It will take into account any AutoStart options at the beginning of the line.

Table 5. AutoStart Autostart.ini Location

Product	Operating System	Location
F4400	Windows CE	`\FlashFX Disk`
	Windows Mobile	`\Windows\Autostart`

Installing CAB files

Copy any CAB files you want to install into the AutoStart CAB folder. These CAB files will then be automatically installed in alphabetical order the next time you start the device (with the exception of a Windows Mobile Clean Boot, which would remove the CAB files). Reference the QRG for F4400 with Windows Mobile for information about Clean Boot.

How AutoStart Uses Wceload

If you intend to create highly interactive installers, you should either install the CABs manually or review the section on "Interactive CAB Install" in this chapter.

CAB files are installed by AutoStart using the **`Wceload.exe`** application. Table 6 on page 8 shows available command line options:

Table 6. AutoStart command line options

Option	Description
/noui	Specifies that you will not be prompted for any input during the installation. If the CAB file is signed, any responses will automatically be answered 'Yes.' If the CAB is unsigned, then any responses will be answered 'No.'
/silent	Suppresses dialog boxes during the installation.

Please refer to the Microsoft documentation on your device for further details on **`Wceload.exe`**.

Sample:

```
\Windows\Wceload.exe /delete 1 /noui /silent
"\Windows\AutoStart\<cab file>"
```

Interactive CAB Install

If the CAB installer requires user interaction that must be performed during the AutoStart CAB installation process, you can specify a special file name to disable the silent mode installation. If this mode is specified, the CAB file will be installed with **`Wceload`** without any command line arguments specified.

An example of what AutoStart would execute is:

```
\Windows\Wceload.exe <cab file>
```

To force this mode of installation via AutoStart, rename the CAB file to include a '**`_`**' character before the "**`.cab`**" extension of the file.

Example:

"**`File.cab`**" should be renamed "**`File_.cab`**" to force AutoStart to not install the CAB in silent mode. This specially-named CAB file should be placed in the AutoStart folder with other CAB files intended for installation on the next reboot.

Autostart.ini

Autoexec.ini, which uses AutoCE on some older models, has been deprecated. These files should be renamed to Autostart.ini and reformatted as described in "AutoStart" on page 1-7.

The **Autostart.ini** is a text file that AutoStart will run upon startup of the Falcon, and after any CAB files are installed. This file should be placed in the AutoStart folder. AutoStart will run the **Autostart.ini** file on each reboot of the device (with the exception of a Clean Boot, which will remove the AutoStart folder).

Line Formatting

Each line of the **Autostart.ini** can consist of Autostart options, an executable, and any command line arguments.

< Autostart option(s)> <full path to executable> <command line arguments>

Sample:

- \windows\pword.exe \file.doc

Table 7 breaks down the sample **Autostart.ini** line.

Table 7. Autostart.ini line formatting

Autostart option(s)	Full path to executable	Command line arguments
-	\windows\pword.exe	\file.doc

Spaces must be placed between each component of the line in the **Autostart.ini**.

If the executable path is in a folder that contains spaces in the name, quotes are required to distinguish what the actual executable name is. The following is an example of this:

"\Program Files\PSC\ScannerApp.exe" /run (valid)

\Program Files\PSC\ScannerApp.exe /run (invalid)

The second line is an invalid line because there is no way to distinguish the executable from the argument.

AutoStart Options

Table 8 shows options you can use when writing a line in the **`Autostart.ini`** file.

Table 8. Options for Autostart.ini

Description	Character	Comments
Comment: This line will not be executed.	**`'#' OR ' ' (space)`**	This may only be used as the first character of the line. If the comment option is specified in the options elsewhere, it is ignored.
Do not wait on line completion: This will cause the line to execute and immediately move onto the next line.	**`'-'`**	
Query: Request user confirmation when running the executable.	**`'?'`**	This will halt parsing the Autostart.ini until the confirmation is answered. *This is intended for debugging the Autostart.ini file.*
Execute only on Cold Reset	'!'	

Cold Reset Only: This will cause the line to execute only after a Cold Reset.

An empty line will be treated as a comment line.

Combining Options

Autostart options can be combined together as shown in the following sample:

```
?- \Windows\Pword.exe
```

This line would:

- Request confirmation before executing the line. The next line would not be processed before the confirmation is answered.
- Run the next line without waiting on the current line to complete execution.

Query Option

The query option is intended for use when debugging the **`autostart.ini`**. When a line with this option is executed, the following dialog will appear with

the specified executable and command line arguments. The populated fields shown in the AutoStart Execute Query are described in Table 9 on page 11.

AutoStart Execute Query

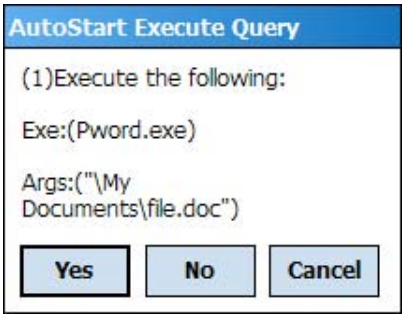


Table 9. AutoStart Query options

Field	Description
Line Number	This is the line number in the script being executed.
Exe	The executable as parsed by AutoStart.
Args	The argument as parsed by AutoStart.

The fields may be broken up into multiple lines (as shown in the example) due to limited space in the dialog.

Parentheses are used to surround the given field and make it very clear what the value of the field is.

Table 10 describes the results of each choice:

Table 10. AutoStart Query actions

Button	Action
Yes	The current line will execute.
No	The current line will not execute. AutoStart will continue parsing the Autostart.ini.
Cancel	The current line will not execute and AutoStart will discontinue parsing the Autostart.ini.

Autostart.ini Samples

Table 11 on page 12 is a collection of sample Autostart.ini lines.

Table 11. Sample Autostart.ini lines

Line	Description
`? \windows\wceload.exe "\My Documents\FDU.cab"`	This will confirm the execution of **`\Windows\wceload.exe`** with specified argument **`"\My Documents\FDU.cab"`**
`\Program Files\App.exe`	*(invalid)* This will execute **`\Program`** with the argument **`Files\App.exe.`**
`\Program Files\App.exe /run`	*(invalid)* This will execute **`\Program`** with the argument **`Files\App.exe /run.`**
`"\Program Files\App.exe" /run`	This will execute the program **`\Program Files\App.exe`** with the argument **`/run`**.
`?- \Windows\Pword.exe`	This will confirm the execution of **`\Windows\Pword.exe`**. If the execution is confirmed, AutoStart will immediately process the next line.
`!"\Program Files\App.exe" /run`	This will execute the program **`\Program Files\App.exe`** with the argument **`/run`** ONLY after a Cold Reset.

Asia Pacific
PSC Hong Kong
Hong Kong
Telephone: [852]-2-584-6210
Fax: [852]-2-521-0291

Australia
PSC Asia Pacific Pty Ltd.
North Ryde, Australia
Telephone: [61] (2) 9870 3200
Fax: [61] (2) 9878 8688

France
PSC S.A.R.L.
LES ULIS Cedex, France
Telephone: [33].01.64.86.71.00
Fax: [33].01.64 46.72.44

Germany
PSC GmbH
Darmstadt, Germany
Telephone: 49 (0) 61 51/93 58-0
Fax: 49 (0) 61 51/93 58 58

Italy
PSC S.p.A.
Vimercate (MI), Italy
Telephone: [39] (0) 39/62903.1
Fax: [39] (0) 39/6859496

Japan
PSC Japan K.K.
Shinagawa, Tokyo, Japan
Telephone: 81 (0)3 3491 6761
Fax: 81 (0)3 3491 6656

Latin America
PSC S.A., INC.
Miami, Florida, USA
Telephone: (305) 591-3222
Fax: (305) 591-3007

United Kingdom
PSC Bar Code Ltd.
Watford, England
Telephone: 44 (0) 1923 809500
Fax: 44 (0) 1923 809 505

www.psc.com

PSC Inc.
959 Terry Street
Eugene, OR
Telephone: (541) 683-5700
Fax: (541) 345-7140

©2006 PSC INC.
R44-2635 (Rev A)
11/06